THE CHEMIST

FEBRUARY 1950 VOLUME XXVII No. 2

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(See page 43)

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Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.

60 East 42nd Street, New York 17, N. Y.

Volume XXVII | February 1950 | Number 2

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Entered as second class matter April 8, 1936, at the Post Office at New York, N. Y., under Act of August 24, 1912. Issued monthly at 60 East 42nd Street, New York 17, N. Y. Subscription price, $2.00 a year to members, $3.00 to Non-Members. Single copy, this issue $0.25. Copyright, 1950, by THE AMERICAN INSTITUTE OF CHEMISTS, INC.

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Cover Picture

Hillary Robinette Jr., chairman of the Pennsylvania Chapter, AIC, is research director of Amalgamated Chemical Corporation, Philadelphia, Pa., manufacturers of textile, paper, and leather chemicals.

During the war, he served with the Textile Section of the Research and Development Branch, Military Planning Division, Office of the Quartermaster General. He was awarded the Army Commendation Ribbon for his work on protective clothing.

Before the war, Mr. Robinette was with Commercial Solvents Corporation, working on textile, paper, and leather chemicals. He was president of W. H. and F. Jordon Manufacturing Company, Philadelphia, producers of textile chemicals, and prior to that spent six years in the research department of Rohm & Haas, working on textile chemicals. He is a graduate of Temple University.

He has presented a number of papers before technical associations and has been granted a number of patents in the textile chemical field. He is a member of the American Chemical Society, American Association for the Advancement of Science, Academy of Sciences, American Association of Textile Chemists and Colorists, The Chemists' Club, Organic Chemists Club, Quartermaster Association, the Society of Chemical Industries and the Society of American Military Engineers.

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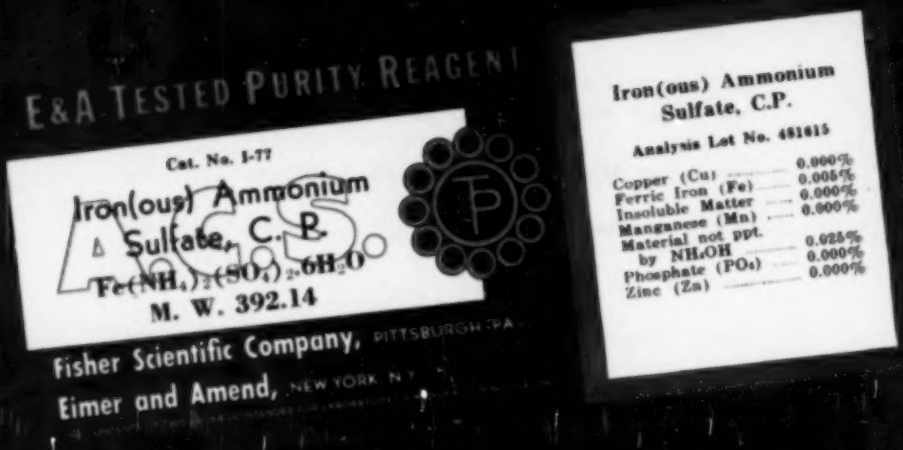
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EDITORIAL

Approach to a Position

Dr. Donald Price F.A.I.C.

AIC Councilor-at-Large

WHEN we contemplate the magnitude of today's chemical industry, we realize that this whole magnificent structure has been erected on a foundation made up of the education and energy of chemists.

The chemist in search of a position has no reason to be apologetic. With a knowledge of what chemists contribute to industry, he has every right to hold up his head in pride. In this way he will approach industry with a manner of confidence in his career, not with the nervous uncertainty which too frequently grips him. Fortified with this confidence, he should also understand some of the conditions which govern the salary he will get. If he is a research chemist, he should understand the special position of the research department in industry.

Concerning salaries, industry is not ill-disposed toward chemists, but individual management has its immediate concern with rising costs and severe competition. Consequently, all things being equal, it tries to get good employees as cheaply as it can under the law of supply and demand. The AIC has always urged those with a chemical education to channel their activities into other fields when possible, unless chemistry is truly their dominant interest. Within the current range, good employers do not haggle over salaries. However, it is sometimes the chemist's own fault that he does not get more salary. Recently a chemist came to me asking for a position. Though I had no opening available, I agreed to talk to him. He told me that his previous salary had been around $400. a month, and that his present obligations would not permit him to take less then $350. Right there I interrupted, "When you talk to a prospective employer, tell him your previous salary, and stop. If he says he cannot pay that, ask him what he expects to pay. Then if he says $375. you are $25 better off than if you had stated a minimum." Except in such special cases, neither you nor your prospective employer wants you to receive less than your previous salary. He knows that a man accustomed to a certain salary cannot do his best work if he has to readjust to a lower figure and worry about financial troubles." This problem does not exist with the large companies. They have a definite schedule of usually liberal salaries for each position. Smaller companies are sometimes not able to pay top salaries, but may offer more individual opportunity.

Concerning research, much damage to the chemists' morale has been

Dr. E. H. Volwiler, speaker. Dr. H. S. Bloch presenting certificate of Honorary AIC Membership to Dr. Roger Adams, at a meeting of the Chicago Chapter, AIC, January 13, 1950.

caused by those industries (usually medium-sized or small) that have been oversold on research during times of prosperity. Ultimately research has to pay its own way. If it is undertaken on a grand scale by a company that has over-expanded, it may happen that the business has to retrench suddenly. It cannot hold on long enough to enable its research to pay off and so it may discharge a whole staff without regard for the chemists who are dismissed and embittered. Research activities should be in direct proportion to the size and importance of a company's business. Research must be undertaken with vision and be a long-range program, soundly financed. Many organizations have sound research policies that have rewarded them generously. The chemist who takes a position with a company whose research activities seem to be small, or even too small, often has a better opportunity to show what he can do. The best advice is to try to connect with a company whose research policy seems sound and not over-expanded. To learn more about industry, there is no better way than to attend professional meetings and get acquainted with the chemists who work in it.

An Educator Observes the Chemist

Dr. Roger Adams, Hon. AIC.

Head, Department of Chemistry, University of Illinois

(Presented on the occasion of the Presentation of Honorary AIC Membership to Dr. Adams, at a meeting of the Chicago Chapter, Jan. 13, 1950.)

I SHALL give you my thoughts on opportunities for chemists, what qualifications must be cultivated in order to assure success, and related subjects.

The opportunities for men trained in chemistry are manifold. Chemists with the Ph.D. degree normally start their careers in research laboratories or as university instructors. My remarks are confined to those who do not choose academic work. Most Ph. D. chemists remain in research all their lives, either as experimentalists in the laboratory or as executives in an industrial, institutional, or governmental research organization.

Industrial research laboratories are of two types. The fundamental type involves the long-range problems undertaken in search for new products or to elucidate the background which may permit basic improvement in known processes. The other type involves process development research where difficulties arising in plant operations are solved or where improvements in plant processes are studied. In either type of laboratory, the chemist, as he matures and learns more about a business organization, may desire to change his line of work to one in which his knowledge of chemistry will prove an important asset and may permit him to outstrip those without such a background. Only when the individual is entirely confident that he will be happier in the new line should he make a change. Merely a salary increase should not be an adequate inducement.

Every research chemist should learn the elements of writing a patent. Some may be sufficiently interested to make patent work their profession. To be most successful, in this the chemist should preferably attend law school, obtain a law degree and pass bar examinations. There will then be the opportunity either to enter the patent department of a commercial company or to take employment in an independent law concern as a chemical or technical patent expert. A well-known patent attorney stated that if he had had a Ph.D. degree in chemistry at his peak earning level in life, he could have doubled his income. At least a dozen Ph.D. students in chemistry from the University of

Illinois have studied law and have been eminently successful in later practice.

Other fields may attract the scientist. For the chemist who has sales ability, there are many favorable openings after a relatively short period of training. Closely related are positions as liaison officers between sales and technical development. Some chemists that have a flare for writing may find an interest in public relations departments, a field which has increased in importance in recent years. Popular science writing has few experts and more are needed. It is a profession whose expansion will mean much to the influence of the scientists among laymen. Companies with large research laboratories require technically trained men for personnel work. Many chemists become interested in process development or plant operation in which the chemist has proved to be a valuable contributor to the success of a team composed of chemists, chemical engineers, and mechanical engineers. From any of these divisions of a company, a chemist with ability, as he acquires more knowledge of business affairs, may eventually be appointed to a top management position.

Occasionally the chemist will start in business for himself either as a consultant or in manufacturing, but the number is small. Far too few of the many who have the qualifications to do so follow these lines.

Opportunities for Those With The B.S. Degree

What are the opportunities for the man with the bachelor's degree in chemistry? Opinions are often sharply divided. My conviction is that a bachelor in chemistry may enter any of the fields just mentioned, other than research, and anticipate a successful career. His success will be dependent upon his general qualifications, essentially those required for the success of the man with more advanced training. If his general qualifications are superior, he may forge ahead of the man with the Ph.D. degree. If the bachelor wishes to practice his chemistry in a laboratory, he may become an assistant to a more highly trained investigator in a research laboratory; he may work in an analytical laboratory, or he may take a position in a plant. A chemist with merely the bachelor's degree with no research training, or merely that involved in preparing a bachelor's thesis, enters a research laboratory with a serious handicap. This handicap, when he is in competition with those more extensively trained, is difficult to overcome. Only the most brilliant who are willing to study indefatigably can reach, in research, the same level in prestige and salary as able men with the Ph.D. degree. This is true also in an analytical laboratory that involves more than routine analyses. Thus, entrance into plant work is the most advantageous step the man

with the bachelor's degree can take, provided he does so with enthusiasm. The breadth of chemistry is such that without the Ph.D. degree, a man should preferably enter a line of work in which chemistry as a background is desirable, but in which advanced technical qualifications are of lesser importance. Openings for skillful chemists at the bachelor's or doctor's level will always be available, though the balance between the supply of and demand for chemists will tip in one direction or the other.

Work Should Be Enjoyed

There is nothing more important to a man than to select for his life's work some line with which he is entirely happy, because then, regardless of his ability and final attainments, he is likely to advance further than otherwise. Contentment with one's vocational activities is a foundation that enables a man to build upon it a superstructure that may tower above original expectations. Enjoyment in daily work should be the main pleasure in life, and ninety per cent of a man's compensation. This is the most important factor in the future happiness and success of an individual. A man who has work he likes will naturally be industrious. There will always be a niche for such a man regardless of life's vicissitudes, his native ability, his education, or the character of his activities. If there were a practical way of locating each person in all levels of society in his proper place, the result would be a happier and more effective nation. The fact that an American has more choice in his life work than citizens of other countries accounts for the generally superior accomplishments in the United States.

Many students in recent years were studying chemistry because they were aware of the availability of many jobs at high salaries. It is disheartening to see men struggling along in a field which does not have their complete interest. An important decision for a chemist is often whether he should pursue research or development or plant operation as his life's work. Each must analyze his own characteristics. Unless an individual has enduring patience and is not discouraged by repeated failures, but is satisfyingly rewarded by occasional successful discoveries, he might well consider something other than research.

The professional training of chemists at the undergraduate level in the larger universities is fundamentally the same. The problem confronting each institution is the degree to which the curriculum should be liberalized with non-scientific courses. When this is done, the graduate will know less chemistry, but he will benefit by his more general education. The curriculum of chemistry now generally offered should require less chemistry and more non-scientific subjects. The danger is that a scientist, not understanding the complexities of today's in-

dustrial society, may believe he can solve them. The more extensive training received by the chemist should be looked upon by him as an obligation to be not merely a specialist but a citizen interested in community, national and world problems.

Graduate Training

There is no standardized method for the training of graduate students in chemistry. Each institution has its own requirements. The fundamentals of chemistry are usually stressed, as they should be, rather than specialized course work. The student enters the graduate school primarily to learn how to do research and to broaden his general knowledge and perspective in chemistry. Assuming that three years for the doctorate is required, it is a disputed subject what proportion of the total time should be devoted to research and to courses. Some universities require practically no course work, and in favor of the viewpoint, the student gets more experience in research and the institution a larger record of publications. On the other hand, complete immersion in a research problem may turn out too narrow a scientist. Others expect the student to devote at least two-thirds of his time to course work, so that he is often unable to complete sufficient research for a satisfactory thesis and thus fails in one of the objectives of graduate work. The proper answer is the median of the two plans. The ratio between research and course work must be flexible to meet the needs of the individual who may have had a broad or a limited background. Assuming a reasonably good training upon entering, the student should devote twenty-five to thirty per cent of his time to courses, to extend his general knowledge in various fields of chemistry and related subjects and to stimulate him to further independent reading and study. The balance of the three years is usually adequate for the student to gain the necessary self-confidence and judgment in research in order to work independently. It is desirable that the student taste both failure and success. To accomplish this, he should have approximately half of his investigational time in work which progresses very slowly toward the desired goal—which affords primarily negative results. It is just as important that half of his research should proceed reasonably well. With too many negative results, the student acquires a defeatist attitude; with too many positive results he has an exaggerated idea of the ease of research and later will be due for disappointment.

What Qualities Does Success Require?

A large industrial chemical concern recently invited Prof. H. F. Johnstone and me to accompany five students to visit its laboratories. I shall confine my description of this interesting trip to an incident at a luncheon attended by about thirty

technical executives, including a vice president of the company. An open discusion was initiated by the question, "What does the concern look for in the chemists whom they interview for positions?" The pertinent item in the reply was that the man's university record and the recommendations of his technical ability were weighted about 70 per cent and his other qualifications, as determined by an interview, about 30 per cent. It was emphasized, however, that qualifications other than technical became of immediate importance the day the man arrived for work. As the individual progressed in experience with the company, the many factors such as cooperation, judgment, diplomacy, which make up a man's personality rose rapidly in importance until the weighting of candidates for higher executive positions became 30 per cent on technical qualifications and 70 per cent on other qualifications.

Students specializing in the sciences are in large measure introverts by nature. Chemists become intensely interested in the solution of a research problem which does not involve contact with people. They fail to recognize that other qualifications besides a knowledge of chemistry are absolutely essential to success. Only a genius, of which the world has very few, can disregard people, do as he pleases, and mold his own personality as he sees fit. In the university, the student is taught to think in terms of variables—time, temperature, concentration. After entering business, he encounters a new set of variables equally important—economic, personal tastes and preferences, organizational. When a chemist accepts a commercial position, his industriousness, enthusiasm, originality, and general ability are carefully scrutinized at the beginning. When, however, a vacancy at a higher level is to be filled, he realizes, often for the first time, that other characteristics than technical are evaluated highly and may be the determining factor in the final selection. To advance rapidly, the chemist must do more than is expected of him by his employer and must demonstrate that his capacity exceeds that of his contemporaries. Few young men realize that an employee must earn for his employer in dollar value about four times his salary in order to justify his continued service.

What is looked for (beyond technical ability) in the chemist who is chosen to direct the work of his fellow scientists? It is sometimes called "leadership ability." No two persons will evaluate similarly the component qualifications, but almost all agree on what the various qualifications should be. He must have a cooperative attitude towards his colleagues. A congenial atmosphere in the laboratory is highly important if each is to do his best work. An individual has enough worries without additional irritation during his working hours by his im-

mediate associates. The one who is sociable and sympathetic with his fellows and not egocentric is naturally popular. Sociability is desirable in an executive in every organization. It is seldom that a man with no interest in people rises far in management. I tell my students they must learn to do things socially and professionally which they do not like. They must learn to mingle with people who may not appeal to them. A great asset to a man is the ability to get along well with and be respected by those for whom he does not care.

Self-Confidence

To lead others, self-confidence is essential. It is the harbinger of initiative. Only with self-confidence is a man eager to take executive responsibility. Self-confidence is of greatest value when the individual blends it with the recognition and the attempted correction of his own shortcomings whether they may be personal or profesional. There is scarcely a person who does not have an inferiority complex about something. The individual with self-confidence does not permit his inferiority complex to handicap him. In fact, the latter is often an indirect asset to the man's personality. Each person has something another envies, so that while he is worrying about what he does not have, the other person envies what he does have, and does not discern the factors which induce the inferiority complex. It is much better for a man to understand his self-deficiencies, not to worry about them, but to set up constructive new habits to overcome them. More chemists do not enter business for themselves primarily because they lack self-confidence and fail to realize that a man with common sense can succeed in business even though he is without a specialized or academic training in business operation and organization.

A good executive may be opinionated but he usually does not dictate to his subordinates. If he cannot sell his ideas to them, his ideas are more likely to be wrong than right. To be entirely effective, he must give full credit for accomplishments to those who rightfully deserve them; he must be interested in the personal and professional welfare of those working for him. He must be receptive and considerate of their ideas and suggestions. The leader must be able to coordinate work properly and adjust his activities with the larger problems of the company. He must pay attention to economic factors. His suggestions to superiors must be without complaint, and he should not be disappointed when his suggestions are not always followed. A man with average technical qualifications may leave behind those with superior technical qualifications, because he cultivates more effectively those other factors essential to leadership and success.

The Power of Words

The aptitude in a man to express himself with precision and to write a direct, concise, and clear report is important. It represents a substantial percentage of a man's promotional ability. Much has been said on this subject. Dr. Gustav Egloff recently cited as one of the greatest defects in scientific and engineering graduates the inability to speak and write well. Attempts have been made to correct this shortcoming in graduate students, but without much success. The failure to write English stems back to the elementary, high school, and college training of the student. Compare the speaking and writing of any college-educated Englishman with that of an American. The former has always an adequate vocabulary, ease on his feet, and usually brilliance in expressing himself. He has been required by his teachers from his earliest schooling to write well, whether he is being examined in English, botany, history, or geography. Some, but too few, of our graduate students are skillful at writing. I believe these few come by it naturally or perhaps have been trained at home or by one of those rarities, an inspiring teacher of English composition. Fortunately, satisfactory facility in writing and speaking can be acquired by those who will make the effort. It is not necessary for the chemist to have a literary style or the vocabulary of a distinguished author. He can readily learn by practice to organize and express his thoughts clearly and in accepted grammatical language.

Ambition and Enthusiasm

Seldom does a man succeed who does not have ambition and enthusiasm for his work. These are common traits in most students who reach the level of graduate study. But there are all kinds of ambition. Ambition must be combined with a fortitude against discouragement. Some ambitious men are so impatient that when in a few years they do not reach the goal set for themselves, they become discouraged, use less effort, and soon reach a level of mediocrity in which they stay. It is a pity to see a young well-trained scientist of thirty-five suddenly decide that life is too short to struggle so hard for advancement; that he will be satisfied henceforth with the salary he receives and will use his brains only during the hours specified by the company employing him. This situation is more often found in men between forty–five and fifty when they begin to realize they have passed the peak of their physical energy. They may not see clearly any future advancement. They observe capable and aggressive younger men coming along. They believe they are too old to be sought for by other organizations. As a consequence they subside into routine workers who often are not worth the salaries they receive. I have observed that if the individual reaches fifty with his enthusiasm and efforts unabated,

he will be a most effective employee or executive until retirement or until incapacitated by physical disability. Too many men are easily discouraged by keen competition and often seek alibis to explain lack of greater success.

It is well to consider qualities in a scientist which are primarily innate and those which may be cultivated by study, observation, and experience. Imagination and originality fall in the first category. A man cannot learn these in a university, though by good training he may more effectively apply what originality and imagination he has. Memory, enthusiasm and facility to learn and concentrate are important to man's success. Some are born with these aptitudes, but all can be immensely improved by effort. Some individuals just naturally like people. Many who are not sociable may learn to like people as they become more mature. Integrity, industry, initiative, judgment, earnestness or purpose, avoidance of conceit, cynicism or sarcasm, tolerance for the weaknesses or idiosyncracies of others, possession of a sense of humor and especially stability in the face of discouragement appear perhaps to the young man to be minor considerations. Actually they are far more important than he realizes and constitute essential vitamins to recognized success. The observant chemist quickly learns also the necessity of proper personal appearance and to acquire social amenities and courtesies which mean so much in making friends. He should begin early to correct any failings and to improve his good points.

Security or Self-Reliance

Most students today are security-conscious. This is the trend of the times. In deciding upon one of several positions, the deciding factor to the green Ph. D. is often the reputation of the concern with respect to life, accident and health insurance, and retirement allowances. The old-fashioned idea that opportunity for accomplishment and advancement should be the prime consideration in accepting a position is outmoded or overlooked. That achievement almost automatically brings security has been completely forgotten. I wonder whether the philosophy of the individual will ever return to that of the pre-Roosevelt days. Habits of thought which are directed toward "security" are likely to lead to stagnation.

In a recent commencement address, ex-President Hoover aptly remarked, "Security kills the joy that lies in competition, in individual adventure, new undertakings and new achievements." Referring to advocates of New Era Security, he added, "they hold out the attraction that with this 'security' you will finish with an old age pension and your funeral expenses paid by the Government." He further observed "at all times in history, there have been many who sought

escape into 'security' from self-reliance."

President Dwight Eisenhower of Columbia University recently remarked, "American people are unduly obsessed with the desire for security to the detriment of their personal liberty." A violent editorial disapproval appeared in the campus newspaper. The students cynically inferred that this statement from a man who already had a good Government pension was uncalled for, and that President Eisenhower was not interested now in what others might receive. The students did not realize that if President Eisenhower in his younger days had not been oblivious to security but intent on succeeding in his profession, he would not have reached the top, and his pension would have been much lower, even in the traditionally highest-pensioned profession of Military Service.

Security must be considered more than in pre-war years, since the possibility of accumulation of capital during a man's lifetime with the intention eventually of living on the income is not realistic and will not be afforded the majority of chemists in view of the present-day conditions. Desire for security, however, should always be secondary to the opportunity for accomplishment. Economy in Government, less Government control over the individual, lowering of taxes, encouragement instead of discouragement of private enterprise, initiative, and venture capital, by the Federal authorities must come before the old-time vigor and efficiency in the United States can bloom again.

Select a Goal

The accumulation of wealth is still at least a subconscious goal that most of the Ph.D. students would like to attain. But the possibility of a young scientist, even the most capable, to acquire real wealth is so remote that he whose sole ambition is for money is almost certain to meet disappointment. I urge students to strive for a position of influence and power among their associates and that their lives will be happier and more satisfying. Moreover, their financial situation is likely at the same time to be comparably gratifying.

Each chemist should set for himself a near-term goal of achievement requiring five or ten years. With this goal attained, he should prescribe for himself another higher goal. To do this wisely and effectively, the individual must scrutinize his capabilities and potentialities, for a goal beyond any likelihood of accomplishment will undobutedly lead to discouragement. The aspiration to attainment is essential in an ambitious man, but aspirations unattainable because they are beyond the man's ability merely serve to magnify any inferiority complex the individual may have and to lead him into a sense of insecurity.

Professional Status

A discussion of a chemist's qualifications and characteristics leads to a related subject, the professional status of the chemist. Everyone agrees that much improvement is possible and THE AMERICAN INSTITUTE OF CHEMISTS is leading the way. It can not be disputed that the profession of chemistry and the chemist are recognized by the public as never before. Chemists are respected even though their ideas cannot be expressed in terms intelligible to the layman. Discoveries such as penicillin, streptomycin, or DDT, are no longer credited to the wisdom of some business concern or top executive, but to the efforts of scientists aided by the foresightedness and financial support of a sound chemical company. Unfortunately, the individuals who have made the discoveries are usually left nameless or are soon forgotten. Fellow--citizens in other walks of life can seldom associate an important discovery with a distinguished scientist.

It is dubious whether the chemical profession can ever attain with the public the type of respect or esteem held by the legal or medical professions. The reasons are obvious. Chemists and chemical engineers do not operate as individuals or in small groups with contacts directly with the layman. They are almost universally employees of companies or institutions and, consequently, direct business and personal relationships with people are essentially non-existent. To explain to the non-scientist what the chemist does and how he does it, is difficult if not impossible. Contrast this situation with that of the physician, lawyer, or minister, where the layman knows what each does and in a general way understands how he does it. I agree with Dr. Otto Eisenschiml that only if we can better acquaint our fellow citizens with the part we, as individual chemists, play in their lives shall we be accorded the place we justly deserve in the progress of the world.

The chemist is indispensible to modern economy and science is one of the most powerful factors in modern life. It is believed by many scientists that they should have a larger share in world affairs. This deserves analysis. To be sure, the scientist has been trained in a rational method of thought, but this is not characteristic of the scientific profession alone. Most chemists lack acquaintance with administrative and economic factors which are essential in dealing with human problems. They, in general, do not have the experience nor the interest to gain the experience to make them leaders in public life. It has never been demonstrated that the specialist in science is better qualified to control the future of a community than those trained in other fields. Human problems can be solved only by cooperation of scientists

with laymen who have acquired information, judgment, and experience in human relations.

Today the world is essentially run by specialists, administrative, educational, and political as well as scientific experts. Each of the first three will benefit if he has acquired an elementary scientific knowledge at college, just as the scientist will be better off, if he has had economics, government, and philosophy in college. But such knowledge is of little value to the expert dealing with experts. The expert in administration cannot discuss intelligently scientific matters with the expert scientist, or *vice versa*.

The most effective use of science in the world will be through men who have had a thorough scientific education and considerable experience in practical affairs. It is hoped that such men, scarce as they are, may increase in number, for they may act as liaison officers between scientific and administrative worlds in exchange of ideas and information and be acceptable to both groups. When we have more scientists competent in both fields, the status of the chemical profession with laymen will increase enormously in prestige.

Too often the young chemist is indifferent and reserved and seldom a leader in social or community activities. An effort to extend his interests more widely would be of lasting benefit to the professional standing of all chemists and would eventually result in more scientists representing their profession at a high stratum in human affairs.

A Prescription

A country doctor in Wisconsin recently gave an informal radio talk on "How to Live a Hundred Years Happily." He was astounded to find thousands of persons demanding copies. Educational stations in many states rebroadcast the speech and they in turn were deluged with letters. His prescription for staying cheerful in spite of difficulties even appeared in *Readers Digest*. It may be summarized in eight directives: (1) Don't analyze yourself looking for trouble all the time; (2) Learn to like work; (3) Have a hobby; (4) Learn to like people; (5) Learn to be satisfied; (6) Learn to accept adversity; (7) Learn to say the cheerful, humorous thing; and (8) Learn to meet your problems with decision. If a man can put that advice into practice, he will not only be happy but successful, and with a good technical background and a few other qualifications he has the prescription for reaching the top rung of the ladder, no matter what his profession may be.

R. W. Seniff, F.A.I.C., of the B & O Railroad Company, has been elected First Vice President of the Joint Research Committee on Boiler Feedwater Studies of the American Society of Mechanical Engineers.

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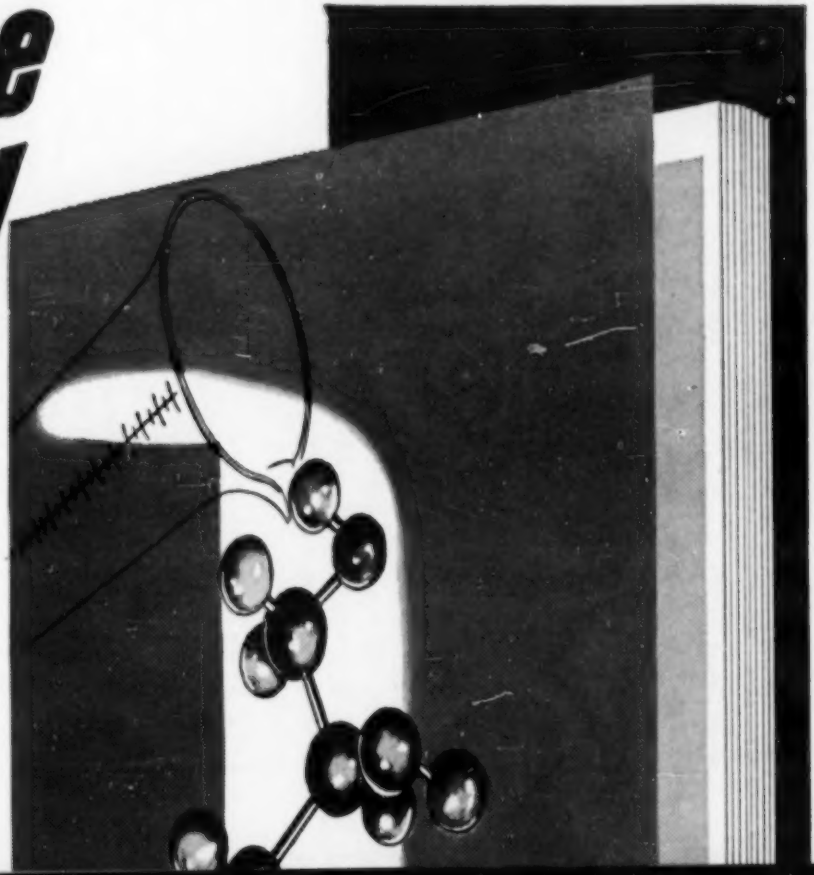

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295 Madison Avenue, New York 17, N. Y.

Dr. Roger Adams

Dr. Ernest H. Volwiler, F.A.I.C.

Executive Vice President, Abbott Laboratories, North Chicago, Illinois

IT IS pleasant indeed to pay tribute to this great man whom it is only necessary to know in order to like and to admire; but difficult, because he has accomplished so much that even a long discourse could not do him justice. Having known him for almost thirty-five years, there comes to my mind such a wealth of things, his scientific accomplishments, his organizational abilities, his grasp of matters in and out of science, and his keen interest in everybody he meets and everything that goes on that it is hard to select from all this wealth a few of the high spots.

Dr. Adams did not waste any time getting started on his career. He entered college at sixteen and he had earned the Ph.D. degree at Harvard by the time he was twenty-two. In between, he had shown his predilection for wanderlust, from which he has never recovered, by working his way on a cattle boat to England. Following the doctorate degree, he again went to Europe, to study for a year under Diels at Berlin and Willstaetter at Dahlem. This also gave him an opportunity to travel in a number of European countries, including Sweden, Finland, and Russia.

Harvard then drew him back in 1913 for further research and teaching, until he came west to Illinois, where he has remained ever since, except for two war interludes, and where he built up a faculty group which, particularly in organic chemistry, is second to none in the world.

When the time and the man come together, big things are bound to happen. The time of Roger Adams' productive life has coincided with the period of the greatest growth of organic chemistry, both in pure research and in industry. Both cause and effect came into play—the time was ripe for this development, and Adams, the man who could most ably exploit this opportunity, had been born at a good time. Without him, organic chemistry would have been quite a few notches lower on the ladder.

The strong line that has tied together his varied activities has been the research which he has carried on and directed. If the problem was difficult and worthwhile, it interested him. He and his students synthesized worthwhile new local anesthetics; they studied anthraquinones. They determined the structures of chaulmoogric and hydnocarpic acids, and

synthesized other high molecular weight acids with similar biologic action against the leper bacillus.

Serendipity

Until twenty-five years ago, the organic chemist generally had a distaste for reductions because the catalysts were not very effective and the yields were poor. Today, his lot is made easier by the catalyst which is known the world over as the Adams' catalyst. It is an activated platinum oxide, and its discovery is a good example of serendipity. (Serendipity is the luck of finding something interesting when you are looking for something else.) Organic chemists had long used platinum in various forms as a reduction catalyst, though often it did not act very well. In this instance, one of Adams' research men was worked with such a catalyst, when the dish broke and the platinum spilled on the old wooden desk top. Platinum being valuable, the student scraped the old wood top to get up as much as he could. To get rid of the wood fibers and other contaminants, he oxidized the material with sodium nitrate. Then, instead of trying to recover the platinum as such, Dr. Adams and his assistant decided to try it as a reduction catalyst, just as it was, though they must have been confident that it would not work. Imagine their surprise when this platinum oxide not only worked, but did so far better than any catalyst had done in this type of reaction. Then they wrote a paper neatly predicting the theory on which this discovery was based, and it is hard to tell which came first, the chicken or the egg.

Other major fields to which Dr. Adams directed the attention of his research students included the difficult one of restricted rotation in substituted biphenyls, cinnamic acids, and aromatic amines; the elucidation of the structure of gossypol, the poisonous principle in cotton seeds, which was an extremely complicated problem, and the subsequent synthesis of even more potent compounds; and a study of the senecio alkaloids.

An indication of Adams' output of important contributions lies in the fact that for thirty years he has averaged about one scientific paper per month. He is very careful about the papers, and although the Ph.D. candidate himself writes up the results of his work, the final draft has usually been meticulously edited and often largely rewritten by "The Chief."

War Work

In both world wars, Roger Adams responded "far beyond the call of duty." In the victories that finally resulted in both instances, his country owed him much. The "Medal of Merit," highest award that can be given to a civilian, came to him naturally.

Before we got into actual warfare in 1917, manual of arms training and drill were offered at Illinois, and Adams joined with other faculty

members and students in this activity. I doubt that he would have made a good foot soldier, so it is fortunate that he could use his abilities in other directions. In charge of gas warfare research unit in Washington, he developed the toxic smoke later called "Adamsite."

By the time the second world war came along, Dr. Adams was an acknowledged leader in American chemistry. He was the logical choice for appointment by President Roosevelt in 1941 as a member of the National Defense Research Committee, to supervise the research undertaken in chemistry and chemical engineering. He was a member of the policy group which passed on the general policy of N.D.R.C., and on the budgets for the various fields. Included in the scope of his supervision were explosives, war gases and their antidotes, impregnated clothing, gas masks, smokes, incendiaries, flame throwers, oxygen production, and a great variety of chemical engineering problems.

He served on the insect and rodent control committee of the O.S.R.D. and of the National Academy of Sciences. He was a member of the National Inventors Council, and chairman of a committee appointed by the Foreign Economic Administration to make recommendations on how to handle German research in industries and universities after the war.

The war years were strenuous, but the Government was not yet ready to let him go back to his research at Illinois. In 1946 he went to Berlin to serve as scientific advisor to General Lucius Clay. While in Germany he served on the technical staff of the liquidation of the war potential committee, which formulated the research control program for post-war Germany. He also gave his attention to the resumption of the publication of scientific literature, and the general problems of scientists.

But even now, Dr. Adams was not through with the aftermath of the war. It is characteristic of him than when he is asked to take on a worthwhile assignment, he is likely to accept, even if it means considerable personal inconvenience and sacrifice to him. So when General MacArthur asked for a six-man scientific committee to come to Japan to advise him on the reorganization of Japanese science, Roger Adams was the man who headed it. The committee spent a strenuous summer in Japan, visiting and studying both industries and universities. Their report to General MacArthur was so significant that a new committee of six, of which Roger Adams was again a member, was asked to come to Japan in 1948 to make a further review of the situation.

Research Program

In spite of these all-important interludes, the development of his own

research program has always had first place in his professional interests. His graduate students, of whom there have now been many hundreds, will all attest to his lively interest and his retentive memory. His infectious enthusiasm has carried many a difficult problem over its hurdles. When I was a graduate student under "The Chief," we especially valued the extra periods when he would drop into the laboratory, any time up to midnight, to talk about our research; and when that was over, the discussion might veer to any other subject. Those sessions, remembered so well by his students, were an expression of comaraderie between master and pupil which many leaders covet but few attain.

Dr. Adams knows how to keep unremitting drive on the work. He may discuss a man's research with him on Friday or Saturday evening, and when he sees him Monday morning he asks, "Well, what's new?" It is told that he once looked through a door and saw a group of his graduate students playing poker in the laboratory. Unperturbed, he walked in and said, "Deal me a hand, boys." In a short time he had pocketed all the money. As he rose to go, his parting advice was, "Let that be a lesson to you; you can't make a living playing cards."

The amount of work he can do, and the amount of detail he can handle expeditiously and in stride, is amazing. Even such a man can slip, though. The graduate students at Illinois must submit regular reports on seminars they have attended. Some of them doubted that Dr. Adams read them all, so one student interspersed on the third page of his report, "I'll pay you a cigar if you have read this far." Another wrote, "I'll buy you a beer if you have seen this." Adams didn't collect, but since the students told him of the gag they had perpetrated, he has been reading them all.

An Interest in Everything

Dr. Adams is interested in everything, be it science or politics or business economics or sports. For years he held the tennis championship of the chemistry faculty at Illinois. He will bet on anything, in amounts adjusted to the other fellow's ability to lose, and his bets are calculated and shrewd. That fall, when everybody seemed to know what would be the outcome of the election for President, he bet a corporation official 1 to 4 that Truman would win. The prevailing odds were 15 to 1 on the other side, but Adams was quite content, and later he collected with much gusto.

Dr. Adams has served chemistry in many ways. His experience with the manufacture of chemicals at Illinois, his work for the Chemical Warfare Service in World War I, and his consulting activities for industrial corporations, impressed him with the need for better directions for the preparation of widely used organic

compounds. Accordingly he planned and carried through the series called *Organic Syntheses*, of which there are now twenty-nine volumes, indispensable to the organic chemist. More recently, he has been the moving spirit and the Editor-in-Chief of *Organic Reactions*, of which five volumes have appeared.

Naturally he was elected president of the American Chemical Society. Later as chairman of its Board of Directors, from 1944 through 1949, he did a great job in steering the Society business affairs along sound lines. The other sciences too have recognized his abilities and stature. This year he is president of the American Association for the Advancement of Science, with its 43,000 members. For some time he has been vice president of the Farm Chemurgic Council.

Honors

Such a man could not escape additional recognition and honors. He is a member of the National Academy of Sciences, and of the Philosophical Society; Fellow of the American Academy of Arts and Sciences; honorary fellow of the British and French chemical societies, and honorary member of the Polish Chemical Society. He has received the top medals within the power of his contemporaries to give: in addition to the Medal of Merit, the Nichols, Willard Gibbs, Elliott Cresson, Davy, T. W. Richards and Priestley Medals.

Roger Adam's good judgement has extended to his family life. He was wise in selecting his ancestors and his wife. When he first met Mrs. Adams, she was a member of the Home Economics faculty at Illinois, a most capable and dynamic teacher in her own right. As the charming wife of a famous scientist, who has had to be away from home so much, she too has served by waiting, but not by idly sitting by. Her activities are as numerous and as strenuous as her husband's. The third member of the family, "little Lucile," has also followed the scientific path. She is serving as biochemist in the Harvard School of Public Health.

Nothing gives us more vicarious pride than to honor an associate for outstanding accomplishments with molecules and with men. Thomas Carlyle wrote, "Show me the man you honor. I know by that symptom, better than any other, what kind of a man you worship. For you show me there what your ideal of manhood is; what kind of a man you long inexpressibly to be."

Dr. Foster D. Snell, F.A.I.C., spoke before the Draper Chemical Society of New York University, Nov. 10th, on "The Position of the Consulting Laboratory in Industry. November 18th, he addressed the American Electroplaters' Society, Newark, N.J., on "Surface Activity and Detergency."

Phi Lambda Upslion Honors Debye

Professor Peter J. W. Debye, F.A. I.C., of Cornell University was initiated into honorary membership in Phi Lambda Upsilon, November 14th, at the Ohio State University. The initiating officers were Prof. Earle R. Caley, and Eta Chapter officers, Robert Albert, Stanley Tannenbaum, and Albert Cohen.

On that evening, Prof. Debye delivered the first of two lectures on high polymers. He outlined the theoretical basis for the light-scattering method of determining high polymer molecular weights, and discussed the application of this method to such materials as rubber and polystyrene. He considered the use of light-scattering measurements in determining the molecular weight of micelles in soap solutions and the geometrical arrangement of ions within the micelles. On the basis of scattering measurements, he indicated that the micelles of dodecylamine hydrochloride in water have a molecular weight of about 12,000; this corresponds to 55 molecules in each micelle, with the hydrocarbon chains oriented toward the interior of the micelle.

At a dinner in his honor, November 15th, Prof. Debye was formally presented with a certificate of honorary membership and a key. The presentation was made by Dr. Thomas Cameron, University of Cincinnati, National treasurer of Phi Lambda Upsilon, after a welcoming speech by Prof. Edward Mack of the Department of Chemistry. This was followed by a short program by two of the newly-initiated student members of Eta Chapter.

In his second lecture, Prof. Debye gave an account of the relationship between the angular distribution of the intensity of scattered light from a polymer solution, and the shape of the polymer molecules themselves. He discussed several polymer models, such as the straight chain, with and without hindered rotation about the C-C bonds; the coiling chain; and the ball models of Kuhn, Huggins, Kramers, and others. He considers that chain models with more or less free rotation about C-C bonds are satisfactory in accounting for experimental results for intrinsic viscosity; and that, on this basis, there is fair agreement between the results from the angular distribution of light-scattering and from intrinsic viscosity measurements.

Copies of Prof. Debye's manuscript are available at a cost of fifty cents per copy from Phi Lambda Upsilon, c/o Department of Chemistry, the Ohio State University, Columbus 10, Ohio.

Elected President

Dr. M. L. Crossley, Hon. AIC, has been elected president of the New York Academy of Sciences, New York, N.Y.

Whitford and Stiegman Appointed

Dr. Earl L. Whitford, F.A.I.C., has been appointed president and treasurer of Oldbury Electro-Chemical Company, Niagara Falls, N.Y., and Dr. C. A. Stiegman, F.A.I.C., has been made secretary of the company.

Dr. Whitford started work with Oldbury in 1925, a year after he received the Ph.D. degree from the University of Wisconsin. He has progressed successively through research to assistant works manager, to director of sales, to secretary, and to vice president, the position he held before his recent appointment.

Dr. Stiegman became director of technical service of Oldbury in 1937, after receiving the Ph.D. degree from the University of Illinois. Oldbury's New York offices are at 19 Rector Street, headed by N. Harold Fyffe, M.A.I.C., general sales manager.

Dr. Robert S. Aries, F.A.I.C., consulting engineer and professor of chemical engineering at the Graduate School, Polytechnic Institute of Brooklyn, N.Y., has just returned from a business tour of the Caribbean area, where he visited the Dominican Republic, Venezuela, Cuba, and Panama, in connection with several industrial projects in the pharmaceutical, alcohol, and wood utilization field.

Dr. Alexander Silverman, F.A.I.C., head of the Department of Chemistry, University of Pittsburgh, was interviewed, December 9th, on Radio Station WCAE, by Dr. B. F. Daubert of the University for the American Chemical Society. The title of the broadcast was "A Chemist Visits Europe." Dr. Silverman spoke of the meetings and purpose of the International Union of Chemistry and the International Congress of Chemistry.

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Chemistry Teachers Wanted

Assistant Professor Chemistry, American University Beirut, Lebanon, man, Ph.D., experience; Instructor Chemistry, Math and Physiology, American College for Girls, Istanbul, Turkey, woman, M.S., experience. Near East College Association, 46 Cedar St., New York 5, New York.

Chemical Engineering Scholarships

Three 4-year scholarships in chemical engineering at Illinois Institute of Technology, Chicago 16, Illinois, will be offered by the Consolidated Natural Gas Systems Educational Foundation of Cleveland, to begin in September, 1950. Applications must be sent to the Director of Admissions of Illinois Tech by May 13th.

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Florence E. Wall, *At-Large*
James R. Withrow, *At-Large*
Lincoln T. Work, *At-Large*

January Meeting

The 263rd meeting of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS was held January 11, 1950, at 5:00 p.m. at The Chemists' Club, New York, N.Y.

Vice President Raymond E. Kirk presided. The following councilors and officers were present: Messrs. C. A. Amick, K. M. Herstein, F. A. Hessel, R. E. Kirk, E. H Northey, H. Robinette, F. D. Snell, L. Van Doren, and Miss F. E. Wall. E. I. Oppel and V. F. Kimball were present.

Dr. Kirk announced that President Flett had asked him to report that progress was being made on plans for the Annual Meeting. Dr. Lincoln T. Work and Dr. Norman Shepard are

assisting with program plans, which include talks to be given at the meeting on the progress of chemical industries at the Mid-Century point and the outlook for chemists during the next fifty years. Speakers for the Annual Medal Banquet include Dr. Charles Allen Thomas and Dr. Kirk.

The Secretary reported that we now have 2427 members.

The Treasurer's report was presented and accepted.

The Committee to Consider a Model Form of Constitution for Chapters reported and presented a proposed constitution. This Constitution was approved with the understanding that it does not act as a revocation of the constitutions of Chapters already in existence, where these have been approved by the Council, but that when Chapter constitutions are to be revised, the new form should be used as a guide.

Model Chapter Constitution

Article I. Name and Objectives

The name of this organization shall be the_____ Chapter of The American Institute of Chemists. Its objectives shall be those of the American Institute of Chemists.

Article II. Membership

Sec. A. All fellows, members and associates of the Institute residing or having their place of business within the geographical boundries specified by the National Council shall be members of the Chapter.

Sec. B 1. Only Fellows of the Institute shall be eligible to be officers of the Chapter.

2. Fellows and Members only shall be eligible to vote on all business and in all elections within the Chapter and to be Chapter Councilors.

3. All members of the Chapter shall have floor privileges at meetings.

Article III. Government

Sec. A. The Chapter shall be governed by a Chapter Council comprising a Chairman, a Chairman-Elect, a Secretary, a Treasurer, a Chapter Representative to the National Council, and three or more Chapter Councilors. Provided, that except it be desirable to have a single Secretary-Treasurer, no person shall simultaneously hold two offices in the Chapter.

Sec. B. Officers and members of the Chapter Council shall be elected annually for terms of one and three years, respectively, except that the Chairman-Elect shall succeed as Chairman and that the terms of Chapter Councilors shall be so chosen that one-third of their number shall be elected each year.

Sec. C. Nominations for Officers and Councilors of the Chapter shall be made by a nominating committee composed of three or five past officers of the Chapter. There shall be at least two nominees for each office. Nominations by members of the Chapter may be made by a suitable number thereof in writing and on proper notice, as specified in the by-laws.

Article IV. Amendments.

This Constitution may be amended by the National Council of The American Institute of Chemists.

Article V. By-Laws

The Chapter may adopt such By-Laws as, after a suitably determinate consideration, it finds are required and as are consistent with the Constitution and By-Laws of the American Institute of Chemists.

Article VI. Dues

The Chapter may charge such dues of its members as it finds are required to maintain and improve its fulfillment of the objectives of the Chapter and as

are approved by two-thirds of those present at a meeting of the Chapter. Provided, that written notice that dues will be considered together with a copy of this Article shall have been mailed to each member of the Chapter at least two weeks before such meeting.

Article VII. Procedure

The rules of Parliamentary Procedure published in Roberts' Rules of Order, shall govern all meetings of the Chapter. A copy of these rules shall be brought by the Chairman or Secretary to every business meeting of the Chapter.

Mr. Amick, serving as alternate for the New Jersey Chapter representative, reported for that Chapter. Two meetings have been held this year—one a panel discussion on "Does present education prepare chemists for industry;" the other a joint meeting with the New Jersey Section of the ACS. On the last Monday in February, a panel discussion will be held on "Safe Practices in Industrial Chemical Laboratories."

Mr. Robinette reported that two meetings of the Pennsylvania Chapter had been held; one in October on "Air Pollution," and the other in December, with Dr. Walter J. Murphy, F.A.I.C., as speaker. On February 19th, a joint meeting will be held with the American Chemical Society.

Mr. Oppel reported for the Membership Committee.

Dr. Kirk suggested that Chapter officers correspond with each other on problems concerning their own Chapter operation to see if they cannot help each other, since the problems differ in different Chapters.

Mr. Herstein reported on recent successful meetings of the New York Chapter. The Chapter Council holds regular meetings twice a month. A program for the entire year is planned in advance.

The following new members were elected:

FELLOWS

Buckman, Alfred Fletcher, Jr.
Development Chemist, S. C. Johnson & Son, Inc., 1525 Howe St., Racine, Wisconsin.

Mark, Arthur M.
Research Chemist, Technical Department, Transparent Package Company, 3520 Morgan St., Chicago, Illinois.

Myers, Albert E.
Head Office Representative, Shell Oil Company, 50 W. 50th St., New York 20, N.Y.

Stern, Ferdinand
Chief Chemist, President, Treasurer, Mastermix Manufacturing Chemists & Mastermix Paint & Lacquer Corp., 348 Van Buren St., Newark 5, N.J.

Von Hessert, Frederick
President, Fairmount Chemical Company, Inc., 600 Ferry St., Newark 5, New Jersey.

MEMBERS

Howell, Virginia
Economic Analyst, Chemical Branch, U.S. Department of Commerce, Washington, D.C.

Jones, Albert J.
Director, Preston Medical Laboratory, 19 West Preston St., Baltimore 1, Maryland.

Longman, Kenneth C.
Research Chemist, Research Laboratory, Ethicon Suture Laboratories, New Brunswick, N.J.

Steelman, Sanford L.
Research Chemist, Armour & Company, 1425 W. 42nd St., Chicago 9 Illinois.

There being no further business, adjournment was taken.

Local Chapter News

C. P. Neidig, F.A.I.C.

New York

Chairman, Dr. Martin Meyer
Vice Chairman,
Lincoln T. Work
Secretary-Treasurer,
Dr. M. J. Kelley
Representative to National Council,
Karl M. Herstein
Publicity, G. A. Kirton

On January fifth, the New York Chapter met at the Brass Rail. The program was devoted chiefly to a discussion of opportunities for chemists in laboratory and non-laboratory positions, and an outstanding panel of speakers discussed these opportunities for the young chemists and students who were guests. President Lawrence H. Flett, AIC, introduced the speakers: Dr. Charles N. Frey, director, Scientific Relations, Standard Brands, Inc.; Dr. W. E. Kuhn, manager Technical and Research Division, The Texas Company; Paul Slawter, vice president, The House of J. Hayden Twiss, Advertising; Harold Fyffe, general sales manager, Oldbury Electro-Chemical Company; Dr. Donald Price, technical director, Oakite Products, Inc.; Dr. William J. Sparks, director of chemical division, Esso Laboratories; and Harold Wakefield, development engineer, Bakelite Corporation. Dr. Martin Meyer, chairman of the Chapter presided.

The speakers pictured for the young chemists the variety of opportunities which awaited them in various fields including production, sales, and advertising. The keen interest of the young chemists was shown by the many interesting questions presented by them at the close of the panel discussion. Following the general discussion, most of the speakers remained for a few minutes to meet the young chemists and answer more questions.

February Meeting

Frank G. Breyer, F.A.I.C., member of Singmaster & Breyer, consulting metallurgical and chemical engineering firm of New York, will be pre-

sented with Honorary Membership in the AIC at a meeting of the New York Chapter, to be held February 15th at the Hotel Commodore. Williams Haynes, author, of Stonington, Conn., will tell Mr. Breyer's personal history. J. A. Singmaster, Mr. Breyer's partner, will discuss his scientific engineering and economic attainments. President Flett, AIC, will present the certificate of Honorary membership to Mr. Breyer, who will respond with an acceptance address entitled, "Grandpa and the Looking Glass." Dr. Foster D. Snell, past president AIC, will introduce special guests. Dr. Martin Meyer, chairman of the New York Chapter, will preside.

Chicago

Chairman, Dr. Herman S. Bloch
Chairman-Elect, Dr. Bruce M. Bare
Vice Chairman, W. B. Hendry
Secretary-Treasurer,
Dr. Glen Hedrick
Representative to National Council,
Gene Abson

The Chicago Chapter met January thirteenth to present Professor Roger Adams, F.A.I.C., head of the Department of Chemistry, University of Illinois and Chairman of the Board of Directors of the American Chemical Society, with Honorary Membership in the INSTITUTE. Preceding the presentation, Dr. Ernest Volwiler, vice president, Abbott Laboratories, and president-elect of the American Chemical Society, summarized Dr. Adams' work in chemistry. Following this, the presentation of the Certificate of Honorary Membership was made by Dr. Herman S. Bloch, Universal Oil Products Company, and chairman of the Chapter. Professor Adams spoke on "An Educator Observes the Chemist." (See page 47).

Pennsylvania

Chairman, Hillary Robinette, Jr.
Vice Chairman, C. P. Neidig
Secretary-Treasurer, John H. Staub
Representative to National Council,
Charles W. Rivise

On January fifth, Dr. Walter J. Murphy, F.A.I.C., THE AMERICAN INSTITUTE OF CHEMISTS' Medalist for 1950, spoke before the Chapter on the subject, "The Challenge of Professionalism." An enthusiastic group heard Dr. Murphy and instigated a long discussion period following his talk.

Dr. Roger W. Truesdail, F.A.I.C., president, Truesdial Laboratories, and member of the Los Angeles Chapter, AIC, has been elected president of the American Council of Commercial Laboratories.

IFT Meeting

The Institute of Food Technologists, Technology Center, Chicago 16, Illinois, will hold its Decennial Conference May 21st to 25th. A special Exhibitors' Day and a Mixer are planned as special events.

For Your Library

Fundamental Processes of Dye Chemistry

By Hans Eduard Fierz-David and Louis Blangey Interscience Publishers. 1949. *xxiv* + 479 *pp.* $9.50.

This book is a translation of the well-known *Grundlegende Operationen der Farbenchemie.*

The principle aim of the authors, as stated in the preface, has been to introduce the fundamental methods of dye chemistry to the student and as such the book is an excellent laboratory manual rather than an exhaustive theoretical treatise on the subject.

Numerous preparations are described in great detail, and since the synthetic methods utilized in the dye industry are equally applicable to the synthesis of aromatic and hetercyclic compounds in general, the value of the book to the organic chemist will be readily appreciated.

Chapters on technical details and a section devoted to analytical procedures for the evaluation of raw materials are included. A few examples of dye analysis are also presented but the authors feel that a complete description of this extensive and difficult field is outside the scope of the present work. Reference is made to various texts and articles dealing with this branch of dye chemistry. Numerous schematic tables increase the value of this attractive and valuable work.

—William H. Van Delden, F.A.I.C.

Die Hefe

By Heinrich Lueers. Verlag Hans Carl, Nuernberg, Germany. 1949. 8¼" x 6". 356 *pp.* 16.50 *Mark.*

There is in this volume an introductory text of seventy-four pages reviewing yeast as an organism, the technic of yeast production, and the uses of yeast. There are 1500 references, some with and some without titles. Most of the references are concerned with the production of yeast in its various forms and a large number of the methods are given in great detail. *Die Hefe* is valuable to chemists concerned with yeast production.

—Dr. Henry Tauber, F.A.I.C.

Colloid Chemistry

By Harry Boyer Weiser. John Wiley & Sons, Inc. 444 *pp.* 6"x9¼". $5.50.

Colloid chemistry, with its concern for surface phenomena is well-treated from the theoretical and practical standpoint. It is still a new and growing subject, and many practical examples are given in this text. The physical phenomena tend to be stressed more than the chemical. However, the border line of chemistry of colloids as distinct from colloid phenomena is still in the empirical stage, and the descriptive matter is eclectic.

The author, dean of the Rice Institute since 1933, was chairman of the National Colloid Symposium for twenty years, and has been editor for colloid chemistry of the *Journal of Physical and Colloid Chemistry* since 1947.

—Dr. John A. Steffens, F.A.I.C.

The Chemistry of Organic Medicinal Products

By Glenn L. Jenkins and Walter H. Hartung, F.A.I.C. John Wiley & Sons, Inc. 745*pp.* $7.50.

The fact that this book is now in its third edition indicates the great need for such a book and emphasizes the regret that it is not an even better book.

The authors, with great labor, have compiled a quite complete set of modern organic medicinal products and have commented on all of them informatively to some extent. However, the intention, stated in the preface, is to organize organic medicinal compounds according to chemical classification and to give the methods of preparation, the properties, the descriptions of the more important compounds, and the relative importance of the compounds.

As far as the organization of organic medicinal compounds is concerned, the book lives up to its promise. It fails in almost all cases, however, to give all four of the items of information promised. Most frequently, the method of preparation is omitted or referred to a generic procedure which is inapplicable. The merit of different portions is highly variable. Some of them, like the section on sulfonamides, show evidence of very great care. In others, material appears to be given almost verbatim from *New and Non-Official Remedies,* or other official

sources and is characterized by the diffuse vagueness of those publications.

There are numerous statements in the book which are questionable either on account of careless writing or lack of accuracy. We find, on page 419, a reference to "The crystalline purified amorphous salts" (of penicillin). On page 440, the statement is made that "the mononitroparaffins are irritating and toxic, the effects increasing with the size of the molecule." On page 115, it is stated that salicyl alcohol is obtained by the hydrolysis of the glycoside (sic), salicin. We believe that this has long been superseded by a synthetic process.

Perhaps, if the book were retitled as a dictionary rather than "The Chemistry" of its subject, some of these criticisms would be obviated and its real value could be appreciated. As a general collection of organic medicinal products, the book has considerable merit. It is also to be commended for its excellent documentation.

—Karl M. Herstein, F.A.I.C.

Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

• *Untersuchungen zur Zerstaeubungstrocknung* by Curt Edeling (1949, 56 pp. with 55 ill., DM6) is published by Verlag Chemie, Weinheim/Bergstr. Author discusses the theory and utilization of spraying (atomizing) in drying apparatus.

• Johann Ambrosius Barth, Leipzig C1, is the publisher of the following 4 booklets: *Anorganische Chemie in Frage und Antwort* by Erich Thilo (1948, 118 pp., DM 4) is a short-course in general and inorganic chemistry addressed to students making their first chemistry exams.—*Die Wasserstoffionenmessung* by Gunther Lehmann (3rd ed., 138 pp. with 62 ill., DM 13.50) explains, in simple language, the meaning of pH, buffers, indicators and the electrometric determination of pH.—*Max Planck—Wissenschaftliche Selbstbiographie* (2nd ed., 34 pp., DM 2.40) is the autobiography of Planck (1858-1947) and Max von Laue's eulogy.—*Bakteriologisches Taschenbuch* by Horst Habs (34th ed. 200 pp., DM 4.20), first printed in 1880, is a well-known text on bacteriological technic, differential diagnosis, special methods for the determination of the various micro-organisms causing infectious diseases, and culture media.

• Two excellent books—in contents as well as in binding, printing, and paper quality—carry the imprint of Verlag Birkhaeuser, Basel: *Die Entwicklungsgeschichte der Chemie* by H. E. Fierz-David (1945, 425 pp. with 107 ill. and 24 tables, SFr 21.50) is different from other books dealing with the history of chemistry: rather than discussing in detail the lives and works of great chemists, it shows that chemistry from its earliest beginning till today has always been dependent on, and developed with, the culture of each epoch. An English translation of this volume would appeal not only to chemists but should also be of interest to the average non-fiction readers.—*Grundlagen der Stereochemie* by P. Niggli (1945, 283 pp. with 207 ill., SFr 32.50) is one of the standard books on the principles of modern stereochemistry. The author is widely known for recognizing the relationship between the crystal structure of complex crystal compounds and Werner's molecule compounds (in 1916).

• Willi Hausam's booklet: *Die Kennzeichnung des Schlachtviehs* (1948, 57 pp., DM 2.80) is a publication of the firm Wissenschaftliche Verlagsgesellschaft m.b.H., Stuttgart. It reports about experiences with newer dye solutions for marking animals; however, the results are not too encouraging.

Booklets

"Radiant Heating Micro and Semi-Micro Combustion Apparatus and Combustion Furnance." Bulletin AD. E. H. Sargent & Co., 4647 W. Foster Ave., Chicago 30, Ill.

"Manual of Standardized Procedures for Spectrophotometric Chemistry." Folder describing this book may be obtained from Standard Scientific Supply Corp., 34 W. 4th Street, New York 12, N.Y.

"Research Bulletin No. 42, New Information on German Developments in Photography and Optics," A list of available translations. Research Information Service, 509 Fifth Ave., New York 17, New York.

"Rotary Feed Table." Bulletin T-25. Write: W. C. Richards, The Bellows Co., 222 W. Market St., Akron, Ohio.

"Tygon Flexible Plastic Tubing. Catalog T-77." U.S. Stoneware Co., P.O. Box 350, Akron 9, Ohio.

"The Occupational Outlook Handbook." 454 pp. $1.75. Superintendent of Documents, Government Printing Office, Washington 25, D.C.

"Factors Affecting Earnings in Chemistry and Chemical Engineering." Bulletin 881, (1946), 10 cents. Government Printing Office, Washington 25, D.C.

"Lithium Aluminum Hydride." Information sheet. Metal Hydrides, Inc., Congress Street, Beverly, Mass.

"'Precision' - Interchemical Rotational Viscometer." (New design.) Information sheet. Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.

"Brookfield Counter-Rotating Mixer." Information sheet. Brookfeld Engineering Laboratories, Inc., 004 Porter St., Stoughton, Mass.

"Hevi Duty Multiple Unit Muffle Furnaces." Information sheet. Arthur S. La Pine and Co., 121 W. Hubbard St., Chicago, Ill.

"The Holland Tunnel Chemical Fire, New Jersey—New York. May 13, 1949" Report by the National Board of Fire Underwriters, 85 John St., New York 7, New York

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"Revised Charts; Hercules Synthetic Resins, and Hercules Synthetic Resin Solutions." Hercules Powder Company, Synthetics Dept., Wilmington 99, Del.

"Corrosion Inhibition with Chromate." 16-page pamphlet by Marc Darrin, F.A I.C., chief research chemist of Mutual Chemical Company of America. Write the company at 270 Madison Ave., New York, N.Y. for a free copy.

Condensates

Ed. F. Degering, F.A.I.C.

Armour Research Foundation

What is defeat? Nothing but education; nothing but the first step to something better.

—Wendell Phillips.

X Nutrient, first reported in milk in 1932, has been identified as vitamin B_{12}.

A combination of an electronically controlled ball and disc mechanism and a spectrophotometer, is reported to distinguish over 100,000,000 colors.

Antarox A-180, a liquid, non-ionic detergent of the aromatic polyglycol ether type, is claimed to be an effective non-irritating detergent.

That bitter taste which results from the exposure of citrus juices to air for some time is believed to result from the oxidation of limonin, a constituent of the peel, particularly of unripe fruits.

A lignin enriched, extremely fine cellulose fiber and a water soluble hemicellulose extract are by-products of the explosion of wood with steam at high pressure.

2-ally-1-methyl-5-hydroxy 1-1 Cyclopenten-3-one, synthesized by the U.S.D.A., is even more toxic to flies than is natural pyrethrum.

Copper-A Compound, a tetra-copper-calcium oxychloride fungicide, is claimed to be one of the surest chemical weapons against late blight of tomatoes.

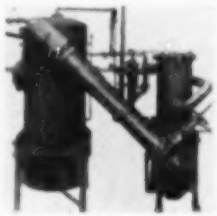
Times do change? ? In 1868, according to Paul Gibson, the *Encyclopedia Britannica* devoted four sentences to the atom and five pages to love, whereas in the recent edition the topic of love is completely omitted and seven pages are devoted to the atom.

By the use of C-14 it has been shown that the C-1 grouping in D- glucose becomes the methyl grouping in ethanol during fermentation.

I am aware of two mental or moral conditions which have contributed to my safe endurance of physical and mental strains. The first is a natural gift, namely, a calm temperament; the second is the result of combination of this temperament with a deliberate practice of avoiding alike anticipations of disappointment and vain regrets. When necessarily involved in contests or critical undertakings, I tried first to do my best in the actual struggle, and then not to concern myself too much about the issue. That was not my responsibility. When blocked or defeated in an enterprise I had much at heart, I always turned immediately to another field of work where progress looked possible, biding my time for a chance to resume the obstructed road. An administrator can thus avoid waste of energy and a chronic state of disappointment and worry. If anyone says that these methods require a serene mind or disposition, I can only say that is hard to tell whether the sound nervous system produces, or results from, the serenity. Certainly anyone who ardently desires to cultivate a calm temperament and serenity of spirit would do well to provide himself, if possible with strong muscles and obedient nerves.

—Charles W. Elliot

The government of India has entered into a 15-year agreement for the processing of its monazite sands for thorium.



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National Council Meeting

The next meeting of the National Council, A.I.C., will be held March 8, 1950, at The Chemists Club, New York, N. Y.

AIC Annual Meeting

The Annual Meeting, AIC, will be held May 11th and 12th at the Hotel New Yorker, New York, N.Y. Dr. Walter J. Murphy, F.A.I.C., will be presented with the 1950 Gold Medal of the Institute. Speakers will include Dr. Raymond E. Kirk, vice president, AIC, and Dr. Charles Allen Thomas, F.A.I.C., executive vice president, Monsanto Chemical Company. Dr. Maurice J. Kelley, F.A.I.C., of Nopco Chemical Company, Harrison, N.J. is chairman of the Committee on Arrangements.

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